

Proposal Reviews

#245: Comprehensive Assessment of Genetic Population Structure and Diversity for Central Valley Chinook Salmon

USDoC National Oceanographic and Atmospheric Administration, Southwest Fisheries Science Center

Initial Selection Panel Review

Research and Restoration Technical Panel Review

Delta Regional Review

San Joaquin Regional Review

Sacramento Regional Review

External Scientific Review #1
#2

Environmental Compliance

Budget

Initial Selection Panel Review:

CALFED Bay-Delta 2002 ERP PSP Initial Selection Panel Review

Proposal Number: 245

Applicant Organization: USDoC National Oceanographic and Atmospheric Administration,
Southwest Fisheries Science Center

Proposal Title: Comprehensive Assessment of Genetic Population Structure and Diversity for Central Valley Chinook Salmon

Please provide an overall evaluation rating.

Explanation of Recommendation Categories: Fund

- **As Is** (a proposal recommended for funding as proposed)
- **In Part** (a proposal for which partial funding is recommended for selected project phases or components)
- **With Conditions** (a proposal for which funds are recommended if the applicant contractually agrees to meet the specified conditions)

Consider as Directed Action in Annual Workplan (a proposal addressing a high priority action that requires some revision followed by additional review prior to being recommended for funding)

Not Recommended (a proposal not currently recommended for funding-after revision may be considered in the future)

Note on "Amount":

For proposals recommended as Fund As Is, Fund In Part or Fund With Conditions, the dollar amount is the amount recommended by the Selection Panel.

For proposals recommended as Consider as Directed Action in Annual Workplan, the dollar amount is the amount requested by the applicant(s).

Fund	
As Is	X
In Part	-
With Conditions	-
Consider as Directed Action	-
Not Recommended	-

Amount: **\$385,869**

Conditions, if any, of approval (if there are no conditions, please put "None"):

None

Provide a brief explanation of your rating:

A technically superior proposal to provide a system-wide assessment of genetic relationships among Central Valley chinook salmon populations that should inform regulatory decisions, hatchery management practices, and restoration efforts. The Selection Panel recommends funding this proposal.

Research and Restoration Technical Panel Review:

CALFED Bay-Delta 2002 ERP PSP Research and Restoration Technical Panel Review Form

Proposal Number: 245

Applicant Organization: USDoC National Oceanographic and Atmospheric Administration,
Southwest Fisheries Science Center

Proposal Title: Comprehensive Assessment of Genetic Population Structure and Diversity for Central Valley Chinook Salmon

Review:

Please provide an overall evaluation summary rating:

Superior: outstanding in all respects;

Above Average: Quality proposal, medium or high regional value, and no significant administrative concerns;

Adequate: No serious deficiencies, no significant regional impediments, and no significant administrative concerns;

Not Recommended: Serious deficiencies, significant regional impediments or significant administrative concerns.

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
XSuperior	Panel members unanimously agreed that this is an outstanding project.
-Above average	
-Adequate	
-Not recommended	

1. **Goals and Justification.** Does the proposal present a clear statement of goals, objectives and hypotheses? Does the proposal present a clear justification and conceptual model for the project?

This was an extremely well written proposal that provided a clear argument for a systemwide assessment of genetic relationships among CV chinook salmon populations. Genetic data generated in this project, combined with existing life history data, should provide a much improved scientific basis for recovery planning for T&E chinook salmon stocks under the ESA

2. **Likelihood of Success (Approach, Feasibility, Capabilities and Performance Measures).** Is the project likely to succeed based on the approach, feasibility and project team capabilities? Are the proposed performance measures adequate for measuring the project's success?

We believe that this proposal has a very high likelihood of success and that the lead investigator appears to have the formal genetics training needed to lead and effort like this. We also commend the apparent collaborative NMFS/CDFG effort that must have been required to develop this proposal and that will be required to see it through to successful

completion.

3. **Outcomes and Products.** Will the project advance the state of scientific knowledge in general and/or make an important contribution to the state of knowledge of the Bay-Delta Watershed? For restoration proposals, is the project likely to contribute to ecosystem restoration or species recoveries in a significant way? Will the project produce products useful to decision-makers and scientists?

This was one of the very few proposals that drew a distinction between performance measures (progress of study collections and genetic analyses when compared to proposed timeframe for project activities) as compared to the projects primary deliverable: a comprehensive model of population structure that integrates observed patterns of genetic variation and available life history data (run timing, location of spawning, sex and age at maturity).

4. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

Projected costs are \$385k over a three year period. We regard this cost as very modest considering the large number of man-hours that will be required to collect samples (donated CDFG time), provide project management and overall analysis (NMFS donated time) and for genetic analyses (budgeted NMFS GS-7 employee). This project would be rated an exceptional bargain in any objective comparison with other projects submitted for consideration by our review panel.

5. **Regional Review.** How did the regional panel(s) rank the proposal (High, Medium, Low)? Did the regional panel(s) identify significant benefits (regional priorities, linkages with other activities, local involvement) or impediments (local constraints, conflicts with other activities, lack of local involvement) to this proposal? What were they?

Regional reviews of this proposal were medium (Delta) and high (San Joaquin, Sacramento). No negative concerns were raised in these reviews.

6. **Administrative Review.** Were there significant concerns about the proposal with regard to the prior performance, environmental compliance and budget administrative reviews? What were they?

No concerns regarding collections were raised as CDFG employees will be responsible for the vast majority of new specimen collections and modern genetic analysis methods do not require that fish are sacrificed.

Miscellaneous comments:

None

Delta Regional Review:

Proposal Number: 245

Proposal Title: Comprehensive Assessment of Genetic Population Structure and Diversity for Central Valley Chinook Salmon

Overall Ranking: -Low **XMedium** -High

Provide a brief summary explanation of the committee's ranking:

This is a solid project, but isn't essential now.

1. Is the project feasible based on local constraints?

XYes -No

How?

o The proposal describes three principal tasks to be completed over a three-year period - collect 50-100 tissue samples from 24 targeted streams and hatcheries for DNA analysis, perform DNA genetic analyses on the tissues at the National Marine Fisheries Service laboratory in Santa Cruz, and manage the project, to include timely submittal of reports to CALFED and oral presentations as necessary. The schedule appears reasonable.

o The qualifications and responsibilities of the proposal applicants are clearly defined.

o No CEQA or NEPA documents will be required to complete the proposal.

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

XYes -No

How?

o This proposal is consistent with two of CALFED's ERP strategic goals - #1 - At-risk Species, and #3 - Harvestable Species.

o This proposal is consistent with the Draft Stage 1 Multi-Region Restoration Priority #6 (ensure at-risk species' recovery by developing conceptual understanding + developing models that cross regions.

o The proposal is consistent with three of the CALFED Science Program Goals in Relation to the ERP - Advance the scientific basis of regulatory activities, Coordinate and extend existing monitoring, and Take advantage of existing data.

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

XYes -No

How?

o This project will build upon products developed from previous Central Valley salmon genetic assessments by improving on the ability to distinguish genetic separation.

o The proposal will complement the ongoing CALFED-funded genetic investigations, Developing a Genetic Baseline for San Joaquin Salmon, Genetic Comparison of Stocks Considered for Re-establishing Steelhead (*Oncorhynchus mykiss*) in Clear Creek, a Tributary to the Upper Sacramento River, Central Valley Steelhead Genetic Evaluation, and Development of a Comprehensive Implementation Plan for Central Valley Hatchery-Produced Chinook Salmon and Steelhead.

o The results of this project will support programs involved with managing particular stocks where it is essential to distinguish desirable stocks.

4. Does the project adequately involve local people and institutions?

XYes -No

How?

o There is no indication of public and/or stakeholder sentiments on the proposal.

o Department of Fish and Game coordinators meet regularly with watershed organizations and government personnel and will inform them at that time of the project status.

o Permission from landowners will be sought for those activities requiring access to private lands.

Other Comments:

XX

San Joaquin Regional Review:

Proposal Number: 245

Applicant Organization: USDoC National Oceanographic and Atmospheric Administration,
Southwest Fisheries Science Center

Proposal Title: Comprehensive Assessment of Genetic Population Structure and Diversity for Central Valley Chinook Salmon

Overall Ranking: -Low -Medium **XHigh**

Provide a brief summary explanation of the committee's ranking:

The committee ranked this proposal as high. The committee agreed that the importance of the genetic information that would be gained from the study, and the ability to include previous studies' findings into the results by utilizing a broad spectrum of microsatellite markers and HCP's make this a very desirable project.

1. Is the project feasible based on local constraints?

XYes -No

How?

Applicants intend to sample post spawned carcasses on the San Joaquin tributaries, taking caudal fin clips and scales for tissue samples. CDFG already conducts carcass counts on these tribs and can collect samples. No permits are required currently for these collections. Access to tribs are either public lands or on private land with owners permission to CDFG. SWFS/ Santa Cruz/ NMFS has technical ability to perform analysis.

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

XYes -No

How?

Strategic Goals #1 (at risk species), #2 (harvestable species- genetic analysis of Central Valley salmonids), Multi-regional #6 (ensure recovery of at-risk species), Sacramento region #7 (genetic assesments), San Joaquin region #4 (improve understanding of at-risk species in region), CALFED science program (advance scientific basis of regulatory activities, coordinate and extend existing monitoring and take advantage of existing data.

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

XYes -No

How?

Project utilizes previous genetic database obtained on many of the Central Valley tributaries as baselines and expands on the geographic scope. Standardizes the range of biomarkers measured so that previously incompatible studies can be analyzed together. Builds on several ongoing and current genetic studies in the Central Valley and dovetails with a coastal chinook salmon genetic study currently being done by the applicant of this study.

4. Does the project adequately involve local people and institutions?

XYes -No

How?

CDFG/AFRP meets on a regular basis with local watershed groups and government agencies. These meetings provide continued contact throughout course of the study. The SWFS center in Santa Cruz will keep the CDFG/AFRP informed as to the findings of the study.

Other Comments:

This is an important study for delineating "races" of Chinook in the Central Valley including the San Joaquin. The data will allow for accurate assessment of stocks captured at sea as to the origins of the fish. The study is non invasive to the fish stocks as it samples dead fish (and then only a small tissue sample is required) and does not effect the population level or harm living fish.

Sacramento Regional Review:

Proposal Number: 245

Applicant Organization: USDoC National Oceanographic and Atmospheric Administration,
Southwest Fisheries Science Center

Proposal Title: Comprehensive Assessment of Genetic Population Structure and Diversity for Central Valley Chinook Salmon

Overall Ranking: -Low -Medium **XHigh**

Provide a brief summary explanation of the committee's ranking:

The review panel agreed overall that this was important research and a high priority project for the Sacramento River Geographical Region.

1. Is the project feasible based on local constraints?

XYes -No

How?

This study will build on the weaknesses of previous studies of chinook salmon in the Central Valley to provide a comprehensive model of population genetic structure and diversity that is consistent with observed patterns of genetic variation and will answer specific questions important in recovery planning processes. This will be accomplished through the creation of a basin-wide, standardized database of microsatellite and MHC genotypic data that incorporates data from previous studies, but provides broader geographic coverage, larger but overlapping numbers of genetic markers, and larger sample sizes. The newly collected data will overlap all previously collected data and provide a "bridge" between the existing data sets.

CDFG biologists have unparalleled field experience with Central Valley salmonids and the collaborators (NMFS) on the project are among the most experienced.

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

XYes -No

How?

Understanding of genetic relationships and the distribution of genetic variation for chinook salmon populations is crucial for the proper design of recovery and restoration efforts. This study addresses ERP Strategic Goals 1 and 3 ; and PSP priority SR-7.

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

XYes -No

How?

This project will complement and provide a framework for the integration of genetic studies funded by CALFED and presently underway (see pg 1 of proposal).

4. Does the project adequately involve local people and institutions?

XYes -No

How?

There is no direct contact between the project scientists and the local people other than through intermediary contact through the CDFG Habitat Restoration Coordinators who are in routine contact with local watershed groups.

Other Comments:

Panel recommended more outreach to public and agencies.

External Scientific: #1

Research and Restoration External Scientific Review Form

Proposal Number: **245**

Applicant Organization: **USDoC National Oceanographic and Atmospheric Administration, Southwest Fisheries Science Center**

Proposal Title: **Comprehensive Assessment of Genetic Population Structure and Diversity for Central Valley Chinook Salmon**

Conflict of Interest Statements:

I have no financial interest in this proposal.

XCorrect

-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

none

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;

Good: quality but some deficiencies;

Poor: serious deficiencies.

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
X Excellent	This project assembles a team well qualified to both sample the fish (CDFG) and analyze them (Dr. Garza). It will bring together fragmented data sets, and perform extensive new sampling to create a complete portrait of Central Valley salmon genetic structure. Valuable research at bargain basement prices!
-Good	
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

The goal of this research is to describe the genetic structure of Central Valley chinook salmon populations. They will accomplish this by extensive new sampling, and incorporation of existing data sets into a single large data set. This is timely and important work.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

Previous efforts at discovering salmon genetic structure have been limited in scope, and have used different sets of markers. This research will bring these disparate data sets together by using some of the same markers as these previous efforts, and greatly extend the scale over which salmon genetic structure will be examined. This is exactly the kind of study that is needed for salmon management in the Central Valley.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

The approach combines the sampling ability of CDFG, with the most up-to-date molecular markers for salmon - microsatellites. In addition, they will also look at immune response to examine reductions in non-neutral genetic variation - a novel aspect of the study. This information will be very useful to decision makers.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

The approach is fully documented, sampling locations are identified and soundly based on field survey and monitoring results, and previous research methodology carefully studied and incorporated. The collaboration with CDFG is inspired! It seems quite feasible and the scale of the project is consistent with the objectives.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

The proposal contains detailed quantified performance measures - i.e. number of samples collected - and work products such as reports and presentations.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

In addition to progress reports, the data will be available to recovery teams, at meetings, and in technical or peer reviewed papers. I would strongly urge the investigators to publish their results in widely-read peer reviewed journals.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

The team is well qualified to perform this work.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

This budget is almost too good to be true - the indirect costs are very low. This is a bargain.

Miscellaneous comments:

External Scientific: #2

Research and Restoration External Scientific Review Form

Proposal Number: **245**

Applicant Organization: **USDoC National Oceanographic and Atmospheric Administration, Southwest Fisheries Science Center**

Proposal Title: **Comprehensive Assessment of Genetic Population Structure and Diversity for Central Valley Chinook Salmon**

Conflict of Interest Statements:

I have no financial interest in this proposal.

XCorrect

-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

Beginning this past fall, John Garza and I are both serving on the Central California Coast Technical Recovery Team for endangered and threatened anadromous salmonids under the ESA. I have met John on perhaps 3 occasions now but hardly feel that I know him well yet. I have also worked with Rich Dixon on various salmon issues over the years, although never with any compensation from CDFG.

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;

Good: quality but some deficiencies;

Poor: serious deficiencies.

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
X Excellent	This is by far the best CALFED proposal that I have thus far read (about 20 total) and is one of the least costly proposals. I wish that other proposals had such clarity of language and such clarity of purpose as this one. It should most definitely be funded.
-Good	
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

These are stated with a clarity that should serve as a model for other CALFED proposals.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project

justified?

Exceptionally well-justified research, vital for recovery planning.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

Approach appears state-of-the-art and entirely appropriate to achieve objectives of proposed research.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

I believe that project tasks could be accomplished during the period of performance of this proposal. I remain skeptical, however, of purely genetic means for estimating straying rates and for calculating effective population size. On the recovery teams I am sure that we will also be looking for experimental tagging studies (for straying) and abundance estimates (to aid in calculating effective population size). The only other issue I have concerns the target sample size of 50 fish from "each watershed". I would feel much more comfortable with 50 fish per "run" within each watershed. For example, in the upper Sacramento there will be (I think) winter, spring, fall and late-fall runs. If only 50 fish were collected, this would mean only 12-13 per run type, surely an inadequate number. This deficiency could be easily rectified and would not apply at all collection locations.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

these are detailed at bottom of page 9 and seem entirely appropriate.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

These are detailed at 10 and seem entirely appropriate.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

Garza seems to have the necessary genetics background and the new NMFS Santa Cruz lab provides him with superb modern facilities. The CDFG cooperators will have to be relied upon for collection of samples and I see no reason why that should not work out, especially given the relatively large numbers of fish seen these past two years. The timing of the proposal is good in terms of recent fish abundances.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

At about \$385k over 3 years, I believe that this project's budget is very reasonable, certainly when compared to other CALFED proposals that ask for much more and propose to deliver much less.

Miscellaneous comments:

Environmental Compliance:

Proposal Number: 245

Applicant Organization: USDoC National Oceanographic and Atmospheric Administration,
Southwest Fisheries Science Center

Proposal Title: Comprehensive Assessment of Genetic Population Structure and Diversity for Central Valley Chinook Salmon

1. Are the legal or regulatory issues that affect the proposal identified adequately in the proposal?

-Yes **X**No

If no, please explain:

DFG scientific collecting permit required.

Identifying property owners for access needs.

2. Does the project's timeline and budget reflect adequate planning to address legal and regulatory issues that affect the proposal?

XYes -No

If no, please explain:

If they are reflected under "Projects Management".

3. Do the legal and regulatory issues that affect the proposal significantly impair the project's feasibility?

-Yes **X**No

If yes, please explain:

Other Comments:

Budget:

Proposal Number: 245

Applicant Organization: USDoC National Oceanographic and Atmospheric Administration,
Southwest Fisheries Science Center

Proposal Title: Comprehensive Assessment of Genetic Population Structure and Diversity for Central Valley Chinook Salmon

1. Does the proposal include a detailed budget for each year of requested support?

☒Yes ☐No

If no, please explain:

2. Does the proposal include a detailed budget for each task identified?

☒Yes ☐No

If no, please explain:

3. Does the proposal clearly state the type of expenses encompassed in indirect rates or overhead costs?

☒Yes ☐No

If no, please explain:

4. Are appropriate project management costs clearly identified?

☒Yes ☐No

If no, please explain:

5. Do the total funds requested (Form I, Question 17A) equal the combined total annual costs in the budget summary?

☐Yes ☒No

If no, please explain (for example, are costs to be reimbursed by cost share funds included in the budget summary).

Applicant requests 3 different amounts in body of proposal - 385,319 v. 385,869 v. 386,319.

6. Does the budget justification adequately explain major expenses?

☒Yes ☐No

If no, please explain:

7. Are there other budget issues that warrant consideration?

☒ Yes -No

If yes, please explain:

Verify applicant's total requested funds.

Other Comments: